

REMARKS

An excess claim fee payment letter is submitted herewith for five excess independent claims and five excess total claims.

Claims 1-25 are presently pending in this application. Claims 1-8 have been amended to more particularly define the invention. Claims 9-25 have been added to assure Applicant the degree of protection to which his invention entitles him.

The amendments to claims 1-8 are made to assure grammatical and idiomatic English and improved form under United States practice. Such amendments are not made to distinguish the invention over the prior art or narrow the claims or for any statutory requirement of patentability. Further, Applicant specifically states that no such amendment should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-2 were rejected under 35 U.S.C. §102(b) as being anticipated by Kitamura, U.S. Patent No. 5,657,338. Claims 1-3 were rejected under 35 U.S.C. §102(e) as being anticipated by Goto, U.S. Patent No. 6,037,189. These rejections are respectfully traversed.

Applicant gratefully acknowledges that claims 4-8 were indicated to be allowable if rewritten in independent form. These claims have been amended in such manner and so are allowable. However, Applicant submits that all the claims are allowable.

Applicant's invention is an optical module. In the exemplary embodiment of Applicant's invention set forth in claim 1, the optical module includes an optical active element and an optical waveguide formed separately from the optical active element. The optical waveguide is coupled to the optical active element. The optical waveguide includes a

spot-size conversion region which is configured by gradually increasing or reducing the width or the thickness, or both, of the waveguide.

With reference to Figure 1 of the drawings, the optical active element 2, such as a light emitting element, is mounted on light-emitting element mounting section 1a, while the optical waveguide 6 is formed separately on PLC chip 1. Waveguide 6 is optically coupled to optical active element 2.

Kitamura shows a tapered thickness waveguide integrated semiconductor laser device. An active optical layer and an output tapered waveguide are integrated on a common substrate.

Goto shows an integrated waveguide device and method of fabricating the integrated waveguide device. Like Kitamura's device, Goto's device includes an active optical element and a waveguide that are integrated on a common substrate.

Neither Kitamura nor Goto shows or suggests an optical module including an optical active element and an optical waveguide formed separately from the optical active element, with the optical waveguide being optically coupled to the optical active element and with the optical waveguide including a spot-size conversion region, configured by gradually increasing or reducing the width or the thickness, or both, of the waveguide, at the end or inside of the optical waveguide adjacent to where the optical active element is coupled, as set forth in claim 1. Neither Kitamura nor Goto shows or suggests an optical active element mounted on a light-emitting element mounting section, and an optical waveguide 6 formed separately on a PLC chip.

In sum, Kitamura relates to a laser diode with a spot-size conversion (SSC) function,

having the SSC region and the laser active-layer formed in a batch so as to enhance the optical coupling efficiency between the laser diode and the optical fiber. Goto adds nothing to this.

In contrast, the present invention relates to an optical module capable of providing highly efficient optical coupling between the waveguide and each of the optical parts, such as a photodiode or a fiber, that is to be packaged on the substrate. The present invention provides a SSC region in the waveguide formed on the substrate for optimizing the waveguide spot size for each port, as shown in Figure 1. Thus, the invention clearly differs from Kitamura, whether considered alone or with Goto. .

It is accordingly submitted that claim 1 and its dependent claims 2 and 3 are allowable.

Claims 4, 5, and 7 have been amended to independent form, and so these claims, together with dependent claims 6 and 8, are allowable.

Dependent claims 9-11 add further features of Applicant's invention to allowable claim 4, and so claims 9-11 are also allowable.

New independent claim 12 includes elements from claims 1 and 4 which distinguish from the references, while omitting other, unnecessary elements. Accordingly, claim 12 and its dependent claims 13-15 are allowable.

New independent claim 16 includes features that distinguish allowable claim 5 from the references, and so claim 16 and its dependent claims 17-19 are allowable.

New independent claim 20 includes features that distinguish allowable claim 7 from the references, and so claim 20 and its dependent claims 21-23 are also allowable.

New independent claims 24 and 25 set forth embodiments of the method of making an optical module in accordance with Applicant's invention and are likewise allowable.

In view of the foregoing, Applicant submits that claims 1-25, all the claims presently pending in the application, are patentably distinct over the prior art of record and are allowable.

Minor corrections have been made to the specification to correct clear errors.

In view of the above amendments and remarks, it is respectfully submitted that all the grounds for objection and rejection have been overcome, that the claims are allowable, and that the application is in condition for allowance. Such action would be appreciated.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned attorney at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

To the extent necessary, Applicant petitions for an extension of time under 37 CFR §1.136. Please charge any shortage in the fees due in connection with the filing of this paper,


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including extension of time fees, to Attorney's Deposit Account No. 50-0481 and please credit any excess fees to such deposit account.

Respectfully Submitted,

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